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## Non-commercial Operations in Bird Control (2nd Bird Control Seminar 1964)

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#### THURSDAY MORNING SESSION

MODERATOR BECK: We will start this morning because when you are dealing with this many college professors and governmental people as you see up here in from of you, you will have a time getting them to quit on time. I doubt if we do it this morning.

This morning, we have a panel that is called "Non-Commercial Operations." I wish Lee Truman were here because he was concerned yesterday about the semantics of "commercial" versus "non-commercial." We only did this to differentiate between those people that work for profit and those people that work for the taxpayer. So this morning's session will be the non-profit session.

One of the basic reasons why we have governmental operations in the field of bird control is the fact that many times there are large segments of the population that have a need for some control, and it is neither fair nor in the American tradition to predicate the answers to those needs entirely upon whether those people are able to pay for it or not.

I would say right off, that the panel yesterday put on by the pest control operators was an excellent job, and generally every man on this panel agrees with the general philosophy stated; and that is, wherever possible, operational bird control, particularly in urban areas should be done by competent and qualified pest control operators.

In this area (Ohio - Michigan), we have a standing arrangement with pest control operators, that if they have special needs or desires in the field of bird control, if they do not feel they have had the necessary training, we will be glad to offer our services to them. We have several arrangements whereby this can be done. We, too, feel that one of the most important functions that government can do in the field of bird control is development, research, field testing, and education.

There are times and places, however, and I want to make this crystal clear, where because of legislated or vested interests it is patently impossible to use an organization that is based on profit motive to solve the problem. Primarily this is because many of the laws and regulations are set up in such a manner that some governmental subdivision must handle the work; and secondly, the before-stated reason that sometimes people need help, and they are not able to pay for it. If there are any questions concerning what I actually mean here, I will be glad to take it up individually after the session.

Now, this morning, we hope that we can show you some new methods that we are working on. A good part of it will be in the field of agricultural bird control, but there are some people here that are concerned about that also. We will use a little different technique than has been employed previously in the sessions, and if you will hold your questions till the end, perhaps we can handle them better.

Now, these four gentlemen here are Paul Ochs, Assistant District Agent, Fish and Wildlife Service, from Springfield, Illinois. To his right, Dr. Alex Cringan from Guelph, Canada. To the right of him, is Ki Faulkner, the Regional Supervisor in this eleven-state area for our branch. And everybody, by this time, knows Dr. Bill Jackson, our host here at Bowling Green State University. So without taking any more of the program time I am going to cut the lights here in the front and get the show on the road.

. . . Slide 1, high blackbird production marsh. . .

MODERATOR BECK: This slide is Alex Cringan's slide. Alex, take over.

DR. CRINGAN; This is a photograph of a managed marsh on the Lake St. Clair shore of Ontario, and our basic problem in southwestern Ontario is depredations of corn by red-winged blackbirds. There are about 60,000 acres of marsh like this and in Kent County alone, almost 175,000 acres of corn. These marshes are managed for waterfowl. The water levels are maintained artificially, and in their management they have developed almost ideal conditions for black-birds although somewhat less than ideal conditions for ducks, I believe. In this particular marsh, there were averages of eight or nine blackbird nests

per acre, during the first nesting, and only slightly fewer during the second nesting, and you can imagine the tremendous number of blackbirds produced from a marsh such as this.

MODERATOR BECK: What is the problem that this is creating to your crops?

DR. CRINGAN: The corn is divided between about five thousand acres of sweet corn and the balance in seed and feed corn; and as soon as the early spring corn comes into the "milk" in mid-July, the blackbirds begin hitting the sweet corn. Damage in Kent County alone has been estimated as high as a million and a half dollars a year, and it is partly the resident birds from these marshes, partly the migrant birds that begin to move-in in mid-summer.

DR. JACKSON: Alex, does this mean then that you can't have ducks and corn, too?

DR. CRINGAN: As the duck marshes are presently managed, there are difficulties in growing corn within five miles of these places, although growers who practice strong vigilance can reduce damage to an acceptability level. Certainly these marshes could be managed so as to improve conditions for ducks and make them somewhat worse for blackbirds than at present.

MODERATOR BECK: The name of this game we are playing this morning is "Hot Potato."

On Slide No, 1 here, Ki Faulkner, what are you going to do about this problem?

MR. FAULKNER: Well, I questioned it yesterday when I first saw it, that we couldn't somehow figure where these birds were feeding and work on this approach rather than working on the marsh itself.

MODERATOR BECK: Do you feel it is impractical to do something in the marsh even though the birds are in large numbers?

MR. FAULKNER: Yes, because of the duck factor.

MODERATOR BECK: Alex, aren't these commercial duck marshes?

DR. CRINGAN: They are commercial and a very high value is placed on the duck land. A few miles from here there is an Indian reserve, and the Indians are so jealous of their duck hunting marshes that they passed a local ordinance prohibiting the use of any pesticide this year, and how this one is going to work out remains to be seen.

. , . Slide No. 2, high and low blackbird production marsh . . .

MODERATOR BECK: This is Slide No. 2, same area, same man.

DR. CRINGAN: Still in the Lake St. Clair marshes; a dyke separates a managed marsh on the right from a natural marsh on the shore of Lake St. Clair on the left. Owing to drought the natural marsh is dry, and this spring there were

about ten times as many blackbirds nesting in the managed marsh on the right as in the dry marsh on the left.

MODERATOR BECK: Do you think you could develop a method for raising more ducks and less blackbirds in the marshes?

DR. CRINGAN: There is certainly far too much cat-tail in the marshes now for ideal waterfowl habitat, and in my own mind I am quite certain that if practices such as draw down and above-the-ice mowing were used, the stands of cat-tail could be reduced; blackbird populations would be reduced and conditions for ducks could be improved.

. . . Slide No. 3, secondary insect invaders in bird-damaged corn. . . ,

MODERATOR BECK: Slide No. 3, same area, same man.

DR. CRINGAM: Early sweet corn photographed before the middle of July. This particular grower was growing for direct sale and because of the early maturity, his corn was the first to be hit by blackbirds, and this shot simply illustrates that as soon as the birds damage, secondary insect pests such as these sap-feeding beetles, move in and further damage the corn; molds at least are likely to invade after damage has occurred, and the particular ear cannot be marketed.

MODERATOR BECK: Paul, what problems have you run into that might be created if this were field corn and not sweet corn?

MR. OCHS: John, the problem in Illinois -- I haven't received the first request on bird damage in corn. In Ohio, this is not a new problem to you. In fact, it is many years old, but the other people here, the problem is: this is not marketable, and early sweet corn is worth probably seventy cents a dozen, being conservative. If you get fifty per cent and sometimes a hundred per cent damage, this runs into quite a serious amount of money.

... Slide No. 4, early acetylene exploder in proper position...

MODERATOR BECK: This is one of the oldest methods of trying to keep birds out of cornfields. This is the old sentinel exploder. It is no longer on the market. We are showing it for two reasons: one is to give you an idea of some of the first methods that were tried, so that those of you who are beginning to have a problem like this won't go back to the same methods; and secondly, I think it is important that we note that the exploder is above the level of the crop. In crop protection, using exploders, you just about have to get above the level of the crop for satisfactory results.

Ki, have you got any comments on this?

MR. FAUUK.NER: No, this one will work for awhile. When you get a "break - over" you have to try another stress. This alone will not control the damage through the entire growing season. There has to be another stress

applied. You can't count on more than about eight area of protection from one of these machines, and moat exploders will run better than \$70.

DELEGATE: Is it applicable where you have ducks and blackbirds in combination?

MR. FAULKNER: Anything that makes noise works for ducks because they are used to being shot at. In Logan airport it was satisfactory in moving black duck off. It did not work on herring gulls or starlings, but they will high-tail it out of any area with a sound like this.

DELEGATE: When the ducks take off is there a tendency for blackbirds to go also, alarmed by the ducks moving out?

MODERATOR BECK: Not necessarily.

DR. CRINGAN: These exploders are being used in the Province of Canada.

. . . Slide No. 5, high boy modified for patrol in cornfield . . .

MODERATOR BECK: This is one of the more recent methods used for crop protection. This is a high boy spray rig, as most of you recognize. On the right-hand side you see a Shure Shot exploder mounted. The guts have been taken out of it so it operates off of a push button. It has a spark-plug for firing. The barrel on the right-hand side holds a man who uses either shot out of a shotgun or uses exploding shotgun shells. This particular device can be used for patrolling standing corn, and does a real nice job.

MR. OCHS: John, I think this particular exploder -- I am not in the habit of commercializing too much, but this individual that makes this particular exploder, which is Shure Shot, can make them to meet individual requirements. He has them all of the way from an automatic operation, starting a half an hour before dawn, to an operation such as this, where the operator fires it himself; and I think this is a real step forward in this type of particular device.

MODERATOR BECK: The cost of the use of this machine, as you can well imagine, is high; but on the other hand, this thing is truck-mounted so that they can move it in the fields that are being heavily attacked with just a few minutes notice. This is being used down in southern Ohio by a Crop Protective Association, a group of farmers that have banded together to help each other with this type of thing. They didn't buy the basic machine especially for corn damage control. They have a lot of seed corn in that area, and that is what it is used for, but it is a good tool when modified in this manner.

... Slide No. 6, bird damage to corn...

MODERATOR BECK: Those of you who haven't seen corn damage, this is it.

DR. CRINGAN: That is not my slide.

MODERATOR BECK: Yes, but this is hot potato. This is yours to talk about.

DR. CRINGAN: We were in conference and I was just asking Ki where an individual could get information on the ballistic qualities of cracker shells. We find here reports that some imported shells are apt to misfire, go off in the barrel, and we would like to be able to tell growers where to go and get a good dependable cracker shell, and what is the answer to that one?

MODERATOR BECK: We are using the one from Denver now which is the only one I know of on the market.

DR. CRINGAN: Manufactured in Denver?

MODERATOR BECK: Right, has a range of about 75 yards and a jobber's cost of about eight, cents a shell; retailer's cost at about eighteen.

DR. CRINGAN: And in Canada this would be about thirty unfortunately.

DELEGATE: I don't want to interrupt now, but I would like to discuss the matter of projectiles when we get around to the discussion.

MODERATOR BECK: Paul, any comments here?

MR. OCHS: Nothing, but it looks pretty typical of what a flock of birds will do to a patch of corn.

MODERATOR BECK: Well, whatever method you use, whether it is frightening, chemical, mechanical or whatever else, if you don't get into that cornfield and put up some form of protection before the damage gets this far, you are just wasting your time; because the damage is already there now. The ears are open. If it is a wet season, the mold is going to set in, so as with most bird problems, the best time to start is at the beginning.

DELEGATE: When you say "beginning," John, are you talking about a period in the corn's growth?

MODERATOR BECK: Corn is usually in the milk, or in soft dough stage, depending on how the blackbird flocks and the growing seasons mesh, when the damage occurs; and that is the time to start your work.

DELEGATE: You start your work at the time the damage starts?

MODERATOR BECK: That is what we prefer.

DELEGATE: Does the flock start a habit of coming into that area prior to the corn coming into the soft dough?

MODERATOR BECK: Very seldom.

. . . Slide No. 7, wooden owl...

MODERATOR BECK: This is an excellent example of a useless technique. Do you see the white place there on the owl's chest?

DR. CRINGAN: I don't think it matters whether it is a decoy, a stuffed owl or a live owl. At a research station near Guelph, we have some hawks which we are using as decoys, and yet the cherry tree growing within 25 feet of the hawk bins was hit very hard by orioles, grackles and robins. The predators do not seem to deter the birds in themselves.

. . . , Slide No. 8, mobile exploder on car ignition system . . .

MODERATOR BECK: This is another modification of the frightening device technique for crop protection. This is a very mobile setup here. The fellows at this particular place are in the process of going out to a field that is being heavily attacked, and they have this car-mounted exploder that operates off of the ignition system. They can fire it when they choose, and all of the cornfields in this Crop Protective Association have driveways around the outside; and if the field is more than a half mile across, there is a road going down the center.

MR. FAULKNER: Here again, after the first or second day, I think the mere fact that the vehicle- is coming down there and they associate the vehicle with the noise, the vehicle then becomes a stress factor in itself. We found this out by color of clothing and also color of vehicle. The birds became used to seeing a particular flash mark you might say.

DELEGATE: How long will they stay out?

MR. FAULKNER: As long as you are in the. area. As soon as another vehicle comes in or another person, they don't associate the flash marks.

MODERATOR BECK: It takes about five days to educate a given bird flock to the use of frightening devices to get them to the point to expect them, to go when you use the frightening device on them.

DELEGATE: How long does it take to keep them out?

MODERATOR BECK: The problem with frightening devices is that sometimes they are. just not effective. We are trying to present to you methods that have some effectiveness. The bird's pressure, of course, is the basic factor governing how effective these devices are.

. . . Slide No. 9, Entex treatment on sweet corn...

MODERATOR BECK: Here is a little different matter. We are getting now over into the chemical method. This is a ten-row sweet corn patch that the birds are used to feeding in. They have been damaging it. We have sacrificed all of the ears in the sweet, corn patch and all of the ears except those you can see exposed have been torn off and thrown on the ground. On these ears, the stalks have been broken off and the eats husked clear back to the butt.



We then treated it with a twelve per cent solution of Entex in corn oil. Within two days we had one hundred per cent kill on the flock that was composed mostly of red-wings, but had some grackles in it also. We also got a few: brown thrashers and one yellow-breasted chat. The flock was approximately five hundred birds.

This was a sweet corn farm. The man had absolutely no more damage to his marketable crop this year. It is now out of the field. After this treatment, he received one hundred per cent protection. However, fields one mile away were being damaged. This gives you some indication of the extreme local nature of some of these feeding flocks in some situations.

Don't rush out and expect this to work every time. This is the first we have used it. It is the first time that it has worked. There were ideal conditions, and it is going to take some work to pin down a method like this before we could begin to recommend it, but you wanted to see what is being done, and this is what is being done.

MR. FAULKNER: This is a trap crop arrangement which has been tried throughout much of the United States by the branch of Wildlife Research, and it is impossible to establish where the bird is going to come in, in another season. It is a difficult thing to do. I think we are going to have to sacrifice part of a crop once the birds arrive, rather than try to establish the area where the birds are going to come.

MODERATOR BECK: There weren't dead birds all over the place, in case you were interested; very few.

DELEGATE: In the case of sweet corn growers, do they not grow this corn so that it comes on at a week or two-week intervals?

MODERATOR BECK: That is correct.

DELEGATE: Is it the pattern that they attack the early corn?

MODERATOR BECK: N<sup>^</sup>\* always, but if they are in it early and they have in mind to damage, yes.

DELEGATE: Then you are saying that probably if you have an early attack, you can plant an early sacrifice strip?

MODERATOR BECK: I am not saying that, but that is what we are trying to develop.

DR. JACKSON: This is a rather time-consuming process if you have to do all this. Can't you do it a little easier?

MODERATOR BECK: The other end of this patch, we left all of the stalks and didn't sacrifice any ears on the ground and only treated random ears which we husked back, making no alteration in the general appearance such as you

see here, and it was not near as effective.

I can tell you that, regardless of what material you use, repellent, or otherwise, that when you pull the stalk down like this and strip the ears, you can predict that the birds are going to hit the exposed ears first, particularly if they are accustomed to damaging and feeding in that field already. So this is a predictable thing.

DR. CRINGAN: Could this method be made applicable to larger sweet corn fields, say, fifty acres or so?

MODERATOR BECK: I hope so, Alex, but one successful test does not prove a tried and true method.

. . . Slide No. 10, Phillips 1861 treatment on field corn . . .

MODERATOR BECK: Dr. Jackson, do you want to talk about this one?

DR. JACKSON: This is an experiment in which we used the Phillips 1861 compound. It shows the method of application, common, ordinary flit gun, which we have now dispensed with, because it produced an aerosol, and we moved over to an applicator which gives us a fine stream.

The ear is stripped back. The ear is then sprayed or coated with the material. We use four or five ears in a plot, and a series of plots scattered through the field.

MODERATOR BECK: Do you scatter these plots at random?

DR. JACKSON: Not from a statistical point of view. We have scattered them at convenient places to get at. It seems to be quite adequate. We take ears which have already been damaged to some extent. You can see this ear has internal damage, since these are the ears the birds are conditioned to return to.

MODERATOR BECK: Can you predict they will return to the damaged ears?

DR. JACKSON: They always have in our tests.

MODERATOR BECK: This is a four per cent solution of Phillips 1861 in acetone with methocel. This has been tested on a 72-acre field. We had 42 stations of five ears each average. Charlie McGriff has done the work on this. We had a 26-acre field with 16 stations --

MR. McGRIFF: 18 stations.

MODERATOR BECK: We had a 15-acre field with 10 stations; two-acre field with five stations; and a couple of other fields with small numbers. The smaller the field the larger the relative number of stations. But even in the two acre field we had five stations of five ears each in a group; that

is only 25 treated ears in two acres. These ears are right together. They are all damaged ears. We used a pin stream also. This doesn't show the pin stream, but we soon changed over to that method.

This to me shows considerable promise, in my personal opinion, where the bird pressure is not as high, as it is within five miles of Lake Erie or within five miles of Lake St. Clair. Alex, any comments here?

DR. CRINGAN: What happens to the flock after it has been scared away through the use of Phillips 1861? Has anyone followed the flock to see where it goes, what it does?

MODERATOR BECK: Well, as you know, it is difficult to follow a flock very far particularly in country where you can't get up above it, as in an airplane, but as near as we can tell we didn't have a revisit by the same flock.

Now, every flock that visits that field must be educated; and it takes about fifteen minutes for this stuff to take effect, so if you have a five thousand bird flock settled in the field, you can have considerable damage before this material takes effect. We found where we had frightening devices used in conjunction with Phillips 1861, we had almost one hundred per cent control of the damage.

MR. OCHS: Also, John, you have quite a carryover on displaying birds in the general vicinity, so if you have other flocks coming in, you do get a carry-over.

MODERATOR BECK: If this flock moves out because of the display of a few birds, and moves to a tree roost nearby, other treated birds begin to be affected; and they begin to display and the flock moves out, and this display may follow the flock for twenty or thirty minutes after it leaves the cornfield. I don't know what it does to their hormone balance, but I have a suspicion that it is pretty rough on the nervous system.

DELEGATE: What is the display exactly?

MR. OCHS: Well, first of all, in flight, it is a faster beating of the wings, but a loss in altitude. They may tumble, and then they will gain velocity again in flight and start beating the wings again and drop down and actually tumble.

MODERATOR BECK: All of the time screaming.

MR. OCHS: On the ground you get the tumbling, rhythmic beating of the wings, fully extended, and tumbling and quite a lot of sounds being emitted very loudly by the bird itself, but a lot of gyrations in flight or on the ground.

MODERATOR BECK: We got fairly good repellancy on these flocks. I say repellancy — you can call it whatever you want — with much less than five per cent mortality.

Now, maybe this isn't what we want when we are dealing with blackbirds, but I will say this: when you are dealing with protected species of birds on crop damage, the less mortality you have, the better off everybody is going to be.

DELEGATE: Has anybody every used synergized toxicants?

MODERATOR BECK: Not to my knowledge. The Phillips people are here.

DELEGATE: Just a comment going back to the last slide, in theory, you are utilizing the birds to do the work for you after you provide this method.

MODERATOR BECK: Precisely.

DELEGATE: How long does it take these gyrations to set in?

MODERATOR BECK: About ten to fifteen minutes.

. . Slide No. 11, modified crow trap in proper location — fruit protection  
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MODERATOR BECK: This is the method being used in southwestern Michigan. This is a small decoy trap for starlings. It is called a modified Australian crow trap.

We have two or three of these traps in Michigan that have taken better than two or three thousand birds, in a single season; they are operated by the farmer, if the farmer is willing and eager enough to do the job properly. Some of the farmers have indicated that they have gotten the first picking off of the top of their sweet cherry trees that they have ever gotten. Also in some blueberry areas, they have been able to reduce the damage. So in some areas, this does pose a possible method. I don't think it too good for Ohio because our damaging species here are different than they are in southwestern Michigan.

DELEGATE: This is catching the young of the year?

MODERATOR BECK: Primarily. You set it up early enough in the spring to pick up the adults as they prepare nests, and it becomes even more effective although less spectacular.

DELEGATE: Is there a bait?

MODERATOR BECK: Yes.

DR. CRINGAN: How large a cherry orchard can be protected by one trap?

MODERATOR BECK: That is a tough question. You tossed a hot potato again. We had one 20-acre orchard that got pretty good results from one of these. However, in the Yakima Valley, they have used this particular trap. They

have about thirty of them in operation. If you ever go into that area, you can see it is a pretty extensive fruit-growing area, and they have reduced the damage better than 80 per cent in the last four years over the total valley with 20 traps. We can't do that well here,

MR. FAULKNER: Most of our cherry orchards in New York State use two of these. They are very portable, and it depends upon the ripening of the cherries if you have various varieties. You keep it near the tree that is ripening off. You get it where the damage is actually being done in the cherry orchard or blueberry orchard.

. . . Slide No. 12, throat of large modified crow trap . . .

MODERATOR BECK: We are down underneath the trap looking up toward the part where the birds drop through. That is a plywood center. This is a double center. Most of the traps only have one set of slits. This is a large trap and there are two sets of slits here. The width of that slit is extremely important. It has to be one and three-quarters inches. If it is smaller, you restrict your catch. If it is larger, a lot of birds get out. You can't just saw a piece of plywood in the garage, stick it in there, and expect it to work.

. . . Slide No. 13, bait and decoy birds . . .

MODERATOR BECK: This is the bait we use. This is the initial bait, and the food at the same time. Now, the bait is not the most important thing. The important thing is to get decoys in there; that is what brings other birds in. But you have to use something to draw the first few birds. These are rotten apples, and yellow seems to be better than red. It doesn't matter how rotten. That is a tire cut in two to use for water. These birds will not survive a thorough wetting in a thunderstorm.

DR. HOWARD: On your decoy business, we keep a lot of birds over the winter. We can provide decoys then throughout the state. It is so important to have those decoys.

DR. CRINGAN: How important is the species of decoy, say you are after red-winged blackbirds?

MODERATOR BECK: Red-winged are not easily taken in this trap. That is my error. Well, let us say that the areas where we have tested this trap in this region, it has not been effective on red-winged blackbirds. Up in New England I guess it is a different matter.

MR. FAULKNER: Down in Arkansas in the rice fields, they are able to catch starlings with starling decoys and blackbirds with blackbird decoys. Location in another important factor.

MODERATOR BECK: If you want grackles you have to put grackle decoys in there to begin with.

DELEGATE: Does the size of the slot have anything to do with the species of the birds?

MODERATOR BECK: If you go to grackles, you go to one and seven-eighths.

DELEGATE: John, you might stress the importance of the location of these things.

MODERATOR BECK: If you don't have these things in the right place, they will just sit there, then the next year they will look like a good place for your hunting dog.

DR. JACKSON: What do you mean by the "right place"?

MODERATOR BECK: You have got to become a birdwatcher in order to put these things in a right place. By right place, it may be near the trees, it may not be. It may be near a freshly plowed hayfield. You have to determine in the local situation where the birds are flying and put your trap as near as possible to this local flyway. Don't expect the birds to come to you.

DELEGATE: You might bring out the fact that this is still experimental in Michigan.

MODERATOR BECK: We have only completed one year's work with this. DELEGATE: Feeding locations, roosting locations or both?

MODERATOR BECK: Both, where the birds fly over the farm or yards or whatever it happens to be.

DELEGATE: Does the number of decoys affect the efficiency?

MODERATOR BECK: Yes. If you run less than five decoys, you are going to have trouble, and if you run more than twenty, you are going to cut your efficiency. You will find somewhere between eight and sixteen birds for this size trip is a pretty good number of decoys to start with. Any comments up here from the panel?

DELEGATE: One more comment on that last one. The types of tending of the trap, the daily run, or the runs on the trap, I think are very important.

MODERATOR BECK: At least once every other day.

DELEGATE: And the number of birds allowed to build up in the traps are correlated with this, and the numbers can't be too high because then the catch drops way off.

... Slide No. 14, red-wing male on fencepost...

MODERATOR BECK: Ki, is this a good time of the year to work with blackbirds.

MR. FAULKNER: Not being familiar with blackbirds I am going to evade that question.

MODERATOR BECK: Paul, do you want to try it?

MR. OCHS: Well, the thing the farmer might like to do that is receiving corn damage would be to shoot this little fellow sitting on the post, but I don't think while this one bird is protecting a territory that it might be wise.

DELEGATE: Are you talking about this time of year?

MODERATOR BECK: That is during the nesting season, and he is holding down a harem of maybe four or five females. The idea is: what happens if you kill him?

DELEGATE: It is a dirty trick.

DR. CRINGAN: Over these treetops, there will be two or three more waiting to move in. There will be three or four unattached males sitting around; and if you did kill this one, another one would just move in as fast as you get rid of the first one. The male matures at two years of age and the female at one, so there is always a big surplus of females around at the mating season.

MODERATOR BECK: Dr. Davis stated that the use of sterilant at this time of year can reduce the field bird population as much as twenty per cent. That is the statement he made two years ago at this same bird conference. Bill, do you want to say anything about the use of sterilants in this situation?

DR. JACKSON: I think from a pure ecological point of view, it is a very desirable thing, because you keep the territorial male in operation; yet he is incapable of reproduction, so that you maintain the space but get no production from it.

MODERATOR BECK: But the practicality of treating it at this time of year is pretty difficult.

DR. JACKSON: Yes, but you have to get the sterilant in the male, and they are difficult to pull in to one central site for feeding.

DR. CRINGAN: What would be the possibility of feeding it to large numbers of males in the winter roosts, just shortly before they break up.

DR. JACKSON: I think this is a desirable thing to investigate. The problem is knowing where the winter roosts are going. You may be sterilizing the whole population of birds going into an area, where there is no need for control, and the people who like to see red-winged blackbirds will be on your neck.

MODERATOR BECK: On this next slide here, we would like to show you what not to do.

. . . Slide No. 15, improper roost treatment . . .

MODERATOR BECK: This is a roost area in central Ohio. It was treated last summer with seven pounds of parathion per "ere and a week later they treated the same area, approximately forty acres, with seven more pounds of parathion.

I think we could put all of the dead birds in my hat. There are houses within a mile or less of this place, and I think the cost of the many factors concerning the birds that we don't understand make this not only an urpalatable operation but an unprofitable one. Ki?

MR, FAULKNER: It is very unselective.

DELEGATE: At what time of day was that treated?

MODERATOR BECK: Late afternoon.

DELEGATE: While the birds were in the roost?

MODERATOR BECK: Just before they arrived, the second time after they were in.

DELEGATE: Aerial application?

MODERATOR BECK: That is right.

DELEGATE: I assume this wasn't your project.

MODERATOR BECK: It was not. We don't recommend this method.

. . . Slide No. 16, possible blackbird treatment area . . .

MODERATOR BECK: This is another possible time when red-wings could be worked on. This flock of almost a hundred per cent grackles came out of a cornfield just shortly before they arrived in this freshly harvested wheat field. It offers possibilities along this line. Now, Alex, what do you see that would hold up this sort of a method?

DR. CRINGAN: Well, the question that keeps worrying me relates to the whole objective of management of the birds. Yesterday we heard management defined as reducing to innocuousness.

I was originally trained as a forester, and foresters concern themselves with forest fire protection a good deal; and the rule of thumb that our dean gave us in our fire protection course was the goal of forest fire protection should be to reduce the cost of protection plus the value of timber destroyed to a minimum, and I think this rule of thumb can be transferred to agricultural bird pest problems. The goal of protection should be to reduce the value of



damage plus the cost of control to a minimum, and one of the factors that has to be considered is the millions upon millions of white grubs and wire worms and Coleoptera of all types that these grackles would consume during the spring and early summer months before they start feeding on corn. I have yet to be convinced that eliminating this particular flock of blackbirds would produce a net gain to some farm. I think we have to know more about the year-round value of these species; and it would sound, at this stage, as if repellant control through the use of Phillips 1861 might lead to very appreciable reduction of the damage and at the same time allow the birds to consume these vast numbers of noxious insects at other times of the year. There is some question in my mind that the aim of the management program should be to wipe out or disseminate individual flocks such as this. We have to find out what the aim should be.

MODERATOR BECK: Paul, assuming that you did want to do something with this flock, how close do you have to live with them?

MR. OCHS: Well, you have to be able, to move in when this bird flock moves in to this particular field and to know when this is going to occur. You are going to have to almost sleep with them. It requires a pretty close association here between the birds and the man to be able to predict what this bird flock will do.

MODERATOR BECK: In other words, it looks like an obvious control operation, but it has a lot of sleepers in it.

MR. OCHS: Very definitely, like your question.

DELEGATE: I would like to ask, do grackles eat the grub of the Japanese beetle?

MODERATOR BECK: I don't know. Anybody want to try that? Do grackles eat the grubs of Japanese beetles? I doubt if they can tell one grub from another, taxonomically,

MR. FAULKNER; We depend upon soil treatment. It does a much more effective job.

DR. JACKSON: Sometimes.

... Slide No. 17, light trap-research tool...

MODERATOR BECK: This is a good research tool. It isn't a good management tool simply because it took twelve man days to set the thing up, and they caught two butterflies. Ki Faulkner has used this in New England and has had a little better result.

MR. FAULKNER: We used this to handle bird roosts. We set it up 27 times similar to this. We caught, about two thousand birds per night, trapping over six nights. There were nineteen men living with this thing many more

days and 27 nights. It is a good tool for recovery of banded birds, but as a control tool, no.

. . . Slide No. 18, possible blackbird treatment . . .

MODERATOR BECK: Now, here is a time when blackbirds are a lot easier to handle and a lot more predictable, and that is after they have set up their territory first thing in the spring. Then when you get a good norther coming in, they will band back up into small flocks such as this one, and they are going to take what they can get, and that is usually in a waste grain field.

Ki, if a farmer were to go in there and take his plow and make a couple circles in the field and the birds move in, what do you think could be done with them?

MR. FAULKNER: I refuse to be a stooge.

MODERATOR BECK: Bill Jackson, do you want to try that?

DR. JACKSON: Well, if your timing is precise, it would be a relatively simple job to use strychnine-treated grain in a field of this sort.

MODERATOR BECK: At what per cent level?

DR. JACKSON: Getting it down to half a per cent, something of this sort. You will, of course, probably kill mourning doves with this sort of thing, but you would be unlikely to get the larger game birds.

MODERATOR BECK: You would not expect to kill quail or pheasant at a half per cent level.

DR. JACKSON: But I think the caution which you need to be concerned with is that you are dealing with the resident flock which is depredating your fields, and you are not catching migrants which are coming through. Again this comes back to the matter of living with your birds, and knowing your flocks and knowing your behavior patterns during the particular season.

MODERATOR BECK: At plowing time, though, this could be a relatively safe method, based on the fact that they are going to cover it up within a couple of days, is that correct?

DR. JACKSON: That is correct.

MR. FAULKNER: Research has gone one step farther with this one, and they have placed nets over areas like this with poisoned grain underneath it. The birds will go under the net, while the mourning doves and other species will not go near it. So we have an ideal control situation, and again, you have to live with the population and determine what can be done.

MODERATOR BECK: The problems here are entirely different than a previous

slide we showed you, Slide No. 19, net for blueberry protection . . .

MODERATOR BECK: Blueberry netting -- very effective, but quite expensive. This particular one in hand-tied nylon imported from Japan, one-inch mesh, coat of about a thousand dollars an acre. I believe yours are cheaper than that up in New England.

MR. FAULKNER: Yes, sir. Those "damn Yankees" -- we don't go out of the country for material either. We go to plasticized netting and put it on 16-foot spindles and so we take it up in three-foot segments, and it only costs us four hundred dollars an acre; but if you write that off over six to seven years, it only costs seventy-five dollars an acre. It pays on a high-paying crop because robins, catbirds, and starlings are our main problem species, and with a high-paying crop, it pays. If a man has just a few acres, he is foolish not to cover it.

MODERATOR BECK: Why not spend four hundred dollars an acre to protect a crop like this, because in a good year, you can net five thousand dollars.

DELEGATE: I might, add those are awfully small blueberry plants.

MODERATOR BECK: These are young.

DELEGATE; would this not be a problem?

MR. FAULKNER: I don't quite follow your reasoning.

DELEGATE: Could you net above these big bushes? Those are just babies,

MR. FAULKNER: You could use eight-foot poles. You wouldn't want to use mesh less than a half inch, because you get into the sugar content problem, and this affects the sale of the berry, but this gives us protection and also diffuses the sun rays.

... Slide No. 20, Phillips 1861 treatment on blueberries.....

MODERATOR BECK: This is a Jersey variety bush that was capped until the berries were dead-ripe. The cap was removed and each berry was counted and treated with 1861. We have been using this method with various "chemicals for about four years, and we have never been able to keep the birds off of the bush for more than seven days. They have always consumed the total amount of berries on the bush.

In this particular instance here, two weeks later, most of the berries were still on the bush; some knocked on the ground were pecked, and some on the bush were pecked, but the berries had stayed on the bush until they were almost rotten.

A very interesting side-light was that in this one trial — remember it is only one trial — the birds were completely absent from this area. Primarily, robins were the problem. Alex, comments?

DR. CRINGAN: I will pass on that one.

DR. JACKSON: John, do we have to use this Jack Frost technique?

MODERATOR BECK: You mean painting them?

DR. JACKSON: Individually painting each berry.

MODERATOR BECK: I don't think so, but I have no information on the phyto-toxicity of 1861, and I don't want to buy a blueberry bush.

MR. OCHS: Why not a slow-killing chemical?

MODERATOR BECK: In one hour's time we had sixteen species of protected birds in this particular blueberry crop. You are not going to be able to use totally lethal methods in a crop like this, especially when this particular five-acre planting is completely surrounded by suburban housing.

DELEGATE: What about these blueberries on the market?

MODERATOR BECK: You have to fence them and put screens up and sacrifice the bushes that are treated.

DR. CRINGAN: Have you any experiments with 1861 on grapes?

MODERATOR BECK: Not that I want to talk about yet.

... Slide No. 21, Phillips 1861 treatment on blueberries...

DELEGATE: Can you give us an idea how long 1861 is potent? What is the breakdown period?

MODERATOR BECK: Rick, how long is 1861 potent in a situation like this, any idea?

DELEGATE FROM PHILLIPS: Personally, this is my first knowledge of it. Our research division has information along this line. I would guess that it would be ten days — I am guessing — that it would be at least a week or two weeks or perhaps longer.

MODERATOR BECK: We have some tests in now, but we don't have results back.

DELEGATE: It would be purely a guess.

MODERATOR BECK: Joe, do you have anything to add to this?

MR. REINERT: No, like Rick, this is my first experience with applications such as this, and if you had some of those blueberries left you could analyze them and see what the results, get.

. . . Slide No. 22, repellant or contact poison at food drive-in . . .

MODERATOR BECK: What do you use here?

MR. FAULKNER: English sparrows in this food drive-in. I expect they must visit the field across the way to feed, and I would work on poisoning on that aspect rather than fooling around with the girders.

MODERATOR BECK: There are two other methods that can be tried on here.

MR. FAULKNER: I am practical.

MODERATOR BECK: Now, you have put me on the hot potato. If you will let me answer that one, I will.

Entanglements are a definite possibility in this area. You don't have to get the neighbor's consent. You have a non-toxic material, and you don't have to worry about the health department angle; and you also have the possibility of contact paints. There are three definite possibilities: painting, contact paints, or entanglement repellant.

MR. FINK: In our experience, we have treated hundreds of these types of problems very successfully with entanglements. I am Joe Fink, National Bird Control Laboratories. We have sprayed this type of an operation successfully hundreds of times.

MODERATOR BECK: I might add that it was your product that was on this building. You can pat me on the back for that plug later. It has been quite successful.

MR. FAULKNER: How many times a year?

MODERATOR BECK: Once a year.

... Slide No. 23, starling nest in eaves...

MODERATOR BECK: What would you use here on the starling operation?

MR. OCHS: A contact poison, where the starling is going in and out of the hole.

MODERATOR BECK: What would you do, Ki?

MR. FAULKNER: I'd cap the hole over.

DELEGATE: I can see why he is the boss.

DR. CRINGAN: He is practical.

. . . Slide No. 24, Entex treatment at grain elevator . . .

MODERATOR BECK: Bill Jackson.

DR. JACKSON: We have had some experimental work with Entex in pigeon control in areas where the pigeons have been roosting in and among grain elevators and have been using the upper flat surfaces as loafing areas. We have put out Entex in these areas. The pigeons pick it up on their feet, and within three to four hours we have had complete control in several situations. It has been lethal. We have found the birds scattered around town, so that it has been quite effective.

MODERATOR BECK: What was your percentage kill here?

DR. JACKSON: Complete in this experiment, MODERATOR

BECK: Is it always that good?

DR. JACKSON: No. In other situations, we have had more repellency than we have had lethal kill. Maybe you have noticed there are no pigeons in downtown bowling green. This is not because we have killed them. We used to have a very nice population; and we applied Entex on the tops of some of our buildings, and the pigeons were repelled by it. We had about a ten or fifteen per cent kill but the remainder was repelled to peripheral parts of town, so we get both repellency and kill, and I am not at this point able to predict which we get ahead of time.

DELEGATE: Just a general spray?

DR. JACKSON: No, Entex paste put out on strips in perching areas.

DR. CRINGAN: What is the risk of secondary poisoning with Entex?

DR. JACKSON: We have not had the laboratory facilities to do any lab work on this, but we have had no circumstantial evidence to indicate that there is any danger.

DR. CRINGAN: Could you risk it at a feed lot?

MODERATOR BECK: I think it has possibilities, very definitely, in a feed lot,

DELEGATE FROM PHILLIPS: We killed approximately one thousand sparrows in a feed lot; the hogs ate them all up, and there weren't any sick hogs. I have heard so far one report — that is in Whitson's report, where it looked like probably a cat got sick from eating an Entex-treated sparrow. On the other hand, I fed a half-grown cat nothing but Entex-killed sparrows for a week, and the cat was growing and getting fat.

MR. REINERT: Speaking from the company's standpoint, as far as I know ---and Glen, maybe you will help me out on this -- the only report we have ever had was Mr. Whitson's report regarding secondary poisoning.

MODERATOR BECK: One comment we failed to make up to this time on Entex is that it has a very high toxicity to red-wings and starlings and a very low toxicity to other species.

DELEGATE: It is slightly higher than DDT.

... Slide No. 2.5, Endrin treatment at warehouse entrance . . .

DR. JACKSON: This is another experimental situation. This is a rather tight warehouse, and English sparrows were getting into it around the openings of these doors. We found that by treating, by painting around these openings with Endrin -- this about five per cent Endrin -- that we got complete control. The birds were eliminated from roosting in this warehouse for at least a year. In several of these situations, we believe that it was largely a repellant action. We could observe these birds coming up to the openings, turning around and going away. In some other situations, we found with Endrin that we had largely lethal control.

MODERATOR BECK: What species?

DR. JACKSON: English sparrows largely.

MODERATOR BECK: This has been duplicated several times?

DR. JACKSON: Yes, we get consistent control, but the nature of control, whether it is repellency or lethal, I have not been able to predict.

DELEGATE: What, vehicle?

DR. JACKSON: In an organic solvent,

DELEGATE: Highly volatile, material?

DR. JACKSON: Yes.

MR. FAULKNER: We had a similar situation in a supersonic air hangar. We treated the same thing where the doors would overlap. We treated just the points of entry. We had roughly eighteen doors. We had six thousand starlings and forty pigeons beside the hangar; and at supersonic speeds parasitic drag on aircraft is quite a problem, so they are spending a hundred man-hours a week cleaning the aircraft so these things would fly without burning up the wings.

We treated them-- you must realize it was dark as the birds approached the area. The only way the birds could get into the hangar was to go through the passages which were treated.

MODERATOR BECK: You just treated the entry ports?

MR. FAULKNER: Entrances. We treated on the inside, so if the birds came through, we weren't sure where they came out on the inside — we treated that area also. We forced the birds to touch down. Actually we believe that we don't have to have these birds in contact for a long period of time. The birds will pick up petroleum jelly on their feet. We get a hundred per cent control. We knocked the population down to one hundred birds in about two and a half weeks — forty pigeons and 5,900 starlings — and complete control and no reinvasion. This is an interesting population.

MODERATOR BECK: You picked up all of the birds, didn't you?

MR. FAULKNER: Most of the deaths were in the hangar or a hundred yards on the pavement around the hangar. We had no reinvasion of population of birds in that area as of March 18. Once the population had arrived during the winter months, we knocked it out and were free of them after.

MODERATOR BECK: You said you used Baytex. Now is that a new product?

MR. FAULKNER: It was then. Baytex today — I guess it is registered as Queletox.

DICK STROUD: I think we ought to clarify this, John. I think we have thrown in about six names.

Baytex, Entex, Queletox, Bayer 29643 are all the same material.

DELEGATE: How about Endrin?

DICK STROUD: No.

MODERATOR BECK: What per cent was that?

MR. FAULKNER: Twelve per cent. As a contact, I wouldn't recommend anything else.

MR. HOCKENYOS: John, in working with a number of formations of Entex, we find that vaseline or petroleum jelly, where the sun hits it, is inclined to melt. Entex mixed with vaseline or petroleum jelly, which is essentially the same, unless you get a very special high-melting grade, in a warm situation, especially on a sun shining on metal, will melt and run and possibly drip, but if you just use an ordinary pressure gun, lubricating grease, it won't. Grease can be put on a piece of tin, and put on a Bunsen burner and heated to smoking, and it won't run. Now, on a steeply sloping metal surfaced roof, it will slide, but I think you will find that a grease, especially a lithium stearate type — and that is most of them these days — will be much nicer to work with than vaseline and petroleum jellies.

DELEGATE: How is it mixed?



MR. HOCKENYOS: It is very simple. You take a high speed stirrer, put a shaft on it and a little propeller blade, put it in a five-gal ion bucket, and add one part either by weight or volume of fifty per cent oil soluble Entex and three parts of a grease, and just whip it until it is thoroughly smooth. Then the bucket is set under a forced flow tube filler; and you fill caulking tubes with it, and put the cap on and you are in business. You use it as a caulking gun to apply it.

. . . Slide No. 26, Endrin treatment in poultry house . . .

MODERATOR BECK: Poultry problem.

DR. JACKSON: This is another situation which we had. English sparrows had invaded this turkey house; as you can see they were roosting on the cross-beams. There were nests in many of the corners, and there were incubator heating units which were gas operated. You can see them hanging just on the left. And the sparrows found these very convenient places to build nests. You can imagine the fire hazard involved with a sparrow nest in a gas heater, so that the owner was very interested in getting these birds out.

We were unwilling to put down any lethal treatments while the turkeys were in here, since they are highly carnivorous and would consume any sparrows that fell down onto the floor. So we waited until the birds were out in the field no longer using this shelter, then went in with Endrin treatments in the entry ports, and got very satisfactory lethal control.

MODERATOR BECK: On plywood?

DR. JACKSON: Yes.

MODERATOR BECK: At what per cent?

DR. JACKSON: Four to five per cent material.

MODERATOR BECK: With penta in it?

MR. FINK: We, have treated similar sheds of this type, where the feeding troughs were in the building, with a repellant on the cross-beams and used them without any poisonous material; and they were very satisfactory.

MODERATOR BECK: Good point.

. . . Slide No. 27, Entex treatment at. steel mill - pigeons . . .

MODERATOR BECK: We tried some Entex here in a steel mill on pigeons. They got in it, tracked it all over. A couple of them died, the rest recovered, flew away to another building. This is one of those instances where we just didn't get any control at all. Ki, what would you do here in this situation?

MR. FAULKNER: I assume those pigeons would have fed on the ground. If they

would have, I would have used strychnine with corn. Here again you were testing a material not a technique.

DR. JACKSON: I think, John, the fact that you were doing that test during the winter, when the particular carrier for the Entex thickens. I think this explains in part your lack on control.

MODERATOR BECK: Shouldn't. They have got it on their feet, got it all over them, Bill.

DR. JACKSON: Yes, I know. We had this same problem in some of our work. Operations which gave control during warmer weather just didn't work during the colder weather.

MR. HOCKENYOS: Entex effectiveness shoves off terrifically at low temperatures,

DELEGATE: Would you state the temperature?

MR. HOCKENYOS: In very hot weather, temperatures in the nineties, you will get results in two hours that you wouldn't get in two days or might not get at all at temperatures below freezing. Now, the freezing point doesn't seem to be important. I mean the difference between 25 and 35 Fahrenheit; there is no marked break at the freezing point. We have puzzled over what it is. It doesn't seem to crystallize. It is just a physiological matter.

MODERATOR BECK: We have had the same problem and can't explain it.

DELEGATE: Is this typical only to Entex?

MODERATOR BECK: As far as I am concerned. I have had some trouble with Endrin.

DELEGATE: Doesn't the viscosity change?

MR. HOCKENYOS: It is not a matter of viscosity change, because with birds in the laboratory and putting the liquid on their feed in measured amounts and then caging some of the birds in a very low temperature and some in a high temperature, you get the difference. It is not the effect of the cold on the jelly; it is just that, for some reason, it doesn't work at low temperatures.

DR. CRINGAN: Might it be in the vascularization of the birds themselves, the blood vessels do not conduct at the same rate?

MODERATOR BECK: Quite possible.

MR. MCGRIFF: Getting back to the previous slide of the steel mill, we had 75-degree weather at the time that was put on, so I don't think you can say that the temperature is the reason that doesn't work.

MODERATOR BECK: I stand corrected on that. He says 75-degree weather, and he is the fellow that did the work.

. . . Slide No. 28, 1861 treatment in feed lot. . .

MR. OCHS: This is a problem that is somewhat typical to the State of Illinois, and one reason for showing this is to show people that we do have bird problems in Illinois. One of the particularly serious problems is the birds -- starlings primarily -- in the feed lot operations consuming large quantities of feed and contaminating much more. This particular operation here was an 1861 operation, not because we feel that 1861 is the final tool, but because this was the only thing we could get the birds to take and get results with it.

We tried, in the last year, many different types of baits, different chemicals, including strychnine on cracked corn, in peanut butter, which is Phillips bait, and this, I think, was corn grits and peanut butter plus 1861 as about a quarter of a per cent; and we got control with the 1861. The rest of them, the birds wouldn't touch.

MODERATOR BECK: Would you point out the one bird in this slide that you feel has had a dose here possibly?

(Mr. Ochs indicated the bird.)

MODERATOR BECK: He is not certain, but he feels that is pretty typical of the flight pattern.

MR. OCHS: One of the things we find that birds do in flight is a high gyration, extremely high, and of course, screaming all of the way up and all of the way down; and this has a tendency to move the rest of them. One of the things I did find out with 1861 which is not particularly startling, but something I think should be kept in mind, in a small flock, you may do one of two things: one, absolutely nothing, which we have demonstrated repeatedly; or, scatter them all over creation, which I had the misfortune of doing. This makes it difficult to handle.

MR. FAULKNER: With 1861, when you do get mortality, you get controlled fall-out. You don't get plummeting.

. . . Slide No. 29, bird roost problem in trees . . .

MR. OCHS: This is another problem. This happens to be the result of a bird roost in a park. This is in Missouri. Of course, the thing to do here, as was pointed out last night, is to move the bird and take soil samples for disease problems; but the thing I wanted to point out, this is what can happen to trees when heavy concentrations of birds roost in a particular area.

MODERATOR BECK: Would you be justified in using Roman candles or other pyrotechnics in this situation?

MR. OCHS: I believe you would definitely.

MODERATOR BECK: Gentlemen, that is all we are showing in the way of slides today. I have a few more pictures up on the desk on that blueberry netting. One more thing before you go to get your coffee. The basic thing in bird population management is counting the doggone things. Now, I have right here a box full of the little punch-out things on IBM cards. I am going to put those on the table up here in a pile, and I want every one of you to come by and look at it and see if you can guess or guesstimate how many of these little pieces of paper we have in this box. For reference, I have counted out one thousand and put them in a vial, and you make a mental note of what you think we have got there, referring to the vial, and then when we come back after coffee, we will tell you how many we actually have.

. . . Coffee break ...

MODERATOR FAULKNER: For the participants who came down here and guesstimated the — I don't know what species — but the population of clippings down here, it is 363,000. Anybody close?

DELEGATE: That is actual count?

MODERATOR FAULKNER: John says, "Yes." Actually what this represents is a good example of species composition, flight tightness, background, size, all these things enter in by species. I mean some sandpipers are a very tight flock when they fly. Crows are very loose. Herring gulls are loose. Starlings and blackbirds are not a real tight flight. So when you look at these populations of birds as they fly over and estimate your first flock of birds, we overestimate the population, and when you throw a different species to them in a different set of conditions, this is what happens, over-estimation. So when we talk about tens of thousands of birds in a city, we probably are liars.